Notes on the Tipulid Genus Dicranomyia.

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TABLE FOR THE DETERMINATION OF THE SPECIES.*

(Based on Osten Sacken's table in Mon. N. A. Dip. Pt. 4.)

1. Wings remarkably narrow, lanceolate . . . . . **longipennis** Schum.
   Wings of the usual shape . . . . . 2.
2. Tip of the auxiliary vein nearly opposite, or before, or only a short distance beyond the origin of the praefurca . . . . . 3.
   Tip of the auxiliary vein a considerable distance beyond the origin of the praefurca . . . . . 31.
3. The whole antennae, or at least their basal joints pale . . . . . 4.
   The whole antennae black or brown . . . . . 13.
4. Discal cell open . . . . . 5.
   Discal cell closed . . . . . 7.
5. Thorax with a single brown stripe in the middle . . **immodesta** O. S.
   Thorax with three brown stripes . . . . . 6.
6. Tip of the auxiliary vein nearly opposite or only a little before the origin of the praefurca . . . . . **gladiator** O. S.
   Tip of the auxiliary vein a considerable distance before the origin of the praefurca . . . . . **cinerea** Doane.
7. Flagellum of the antennae not infuscated . . . . . **pudica** O. S.
   Flagellum of the antennae more or less infuscated . . . . . 8.
8. Knob of the halteres infuscated . . . . . 9.
   Knob of the halteres not infuscated . . . . . 11.
9. Subcostal cross-vein close to the tip of the auxiliary vein. **citrina** Doane.
   Subcostal cross-vein some distance from the tip of the auxiliary cross-vein . . . . . 10.
10. Halteres pale, knobs infuscated; abdomen brownish yellow. **isabellina** Doane.
    Halteres and abdomen infuscated . . . . . **diversa** O. S.
11. Brownish markings along some of the veins and in some of the cells. **marmorata** O. S.
    Wings hyaline . . . . . 12.
12. Body yellowish . . . . . **fulva** Doane.
    Body greenish . . . . . **viridicans** n. sp.
13. Discal cell (in normal specimens) open; tip of the auxiliary vein considerably anterior to the origin of the praefurca; the praefurca is about equal in length to the distance between the origin of the third vein and the small cross vein, or even shorter . . 14.
    Discal cell closed; tip of the auxiliary vein nearly opposite the origin of the praefurca (or, when anterior or posterior, the distance is small); praefurca distinctly longer than the distance between the origin of the third vein and the small cross vein . . . 18.

*I have not seen *D. chorea* Meig., and cannot from the description place it or *D. venusta* Berg. in the table. The latter is closely related to *D. simulans* Walk and *D. duplicata* Doane.

14. Rostrum and proboscis nearly as long as the head . **rostrifera** O. S.
Rostrum and proboscis much shorter than the head . . . . . 15.
15. Thorax brown . . . . . **floridana** O. S.
Thorax ochraceous . . . . . 16.
16. Thorax with a single broad brown stripe . . . . . **ochracea** Doane.
Thorax with three brown stripes . . . . . 17.
17. Stigma pale . . . . . **brevivena** O. S.
Stigma fuscous . . . . . **vulgata** Bery.
18. Thorax shining black, pleura with a silvery reflection.
morioides O. S.
Thorax brownish or grayish . . . . . 19.
19. Femora with a narrow pale band at the tip . . . . . 20.
Femora without such a band . . . . . 21.
20. Posterior margins of the segments of the abdomen lighter.
badia Walk.
Posterior margins of the segments of the abdomen not lighter.
adjecta n. sp.
21. The distance between the tip of the auxiliary vein and the subcostal cross-vein is nearly or quite as long as the stigma . . . . . 22.
The distance between the tip of the auxiliary vein and the subcostal cross-vein is shorter than one-half the length of the stigma . 27.
22. Halteres unusually long . . . . . 23.
Halteres of usual length . . . . . 24.
23. Thorax brown, stripes confluent . . . . . **halterata** O. S.
Thorax yellowish, three brown stripes . . . . . **particeps** n. sp.
24. Thorax yellowish . . . . . 25.
Thorax brownish . . . . . 26.
25. First segment of palpi yellow . . . . . **helva** Doane.
Palpi wholly brown . . . . . **gracilis** Doane.
26. Thorax with a narrow median lighter line . . . . . **brunnea** Doane.
Thorax with yellowish or brown stripes . . . . . **distanas** O. S.
27. The cross-vein separating the discal cell from the first basal cell is arcuated in such a manner that the inner end of the discal cell is but little more distant from the base of the wing than the inner end of the submarginal cell . . . . . **sulta** O. S.
This cross-vein not so arcuated . . . . . 28.
28. Thorax gray with a brown stripe in the middle . . . . **liberata** O. S.
Thorax brown or yellowish . . . . . 29.
29. Thorax brownish with a brown stripe in the middle . **haeretica** O. S.
Thorax brownish . . . . . 30.
30. Stigma distinct . . . . . **stigmata** Doane.
Stigma indistinct . . . . . **moniliformis** Doane.
31. Wings immaculate . . . . . 32.
Wings spotted with brown . . . . . 34.
32. No vestige of a stigma . . . . . **globothorax** O. S.
Stigma distinct . . . . . 33.

33. Stigma brownish; wings with a slight pubesence in the apical portion. **pubipennis** O. S.
Stigma pale; wings without pubesence . . . . . **cervina** n. sp.
34. Wings brownish, three or four brown spots along the anterior margin . . . . . **rara** O. S.
Wings with brown dots in all the cells . . . . . 35.
35. Markings on the wings intense; lobes of the hypopygium rather elongated and deeply incised on the inner margin. **simulans** Walk.
Markings on the wings less intense; lobes of the hypopygium not incised . . . . . **duplicata** Doane.

Dicranomyia viridicans n. sp.—Greenish; head somewhat darker above; palpi and antennae light brown; first two segments of the latter much paler; thorax and abdomen wholly brownish green; the large lobes of the hypopygium brighter green, their inner margins furnished with a strongly chitinized reddish three-pronged appendage; halters whitish; legs greenish, femora somewhat lighter towards the base; wings whitish hyaline; stigma pale; subcostal cross-vein near the tip of the auxiliary vein, which is opposite the origin of the praefurca; veins greenish; discal cell closed, three times as long as wide; great cross-vein some distance before the inner end of the discal cell. Length 5mm., wing 9 mm.

Hab.—Stanford University, Cal. One male.

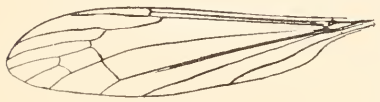
Dicranomyia particeps n. sp.—Brownish yellow; head yellowish, brownish above; rostrum yellow; palpi brown, first segment yellow; antennae brown; thorax yellow with three brown stripes above; scutellum and metanotum grayish; halteres long, brownish, yellowish at the base; legs brownish, feet darker; abdomen brownish, yellowish below; posterior margin of each segment lighter; the tergum of the hypopygium somewhat tumid, with a very narrow median black line, pleura very much smaller than the tumid lobes; upper valves of ovipositor slender, arcuated, lower valves stronger, almost straight; wings long and narrow, hyaline; auxiliary vein ending a short distance before the origin of the praefurca; the distance of the subcostal cross-vein from the tip of the auxiliary vein about equal to the length of the praefurca; stigma faint brownish; discal cell closed; great cross-vein at its inner end. Length 6 mm., wing 7 mm.

Hab.—Keyport, Wash. Nine males, six females.

This species shares with *halterata* and *adjecta* the extra long

halteres. From this latter it may be distinguished by the position of the subcostal cross-vein and from the former by the body being more yellow, wings narrower and in having three brown stripes on the thorax. In *halterata* the pleura of the hypopygium are quite as large as the lobes that are appended to them, while in *particeps* they are much smaller than the lobes.

Dicranomyia adjecta n. sp.—Yellowish brown; head, rostrum, palpi and antennae darker brown; first three joints of the flagellum rather globular, others more cylindrical, all distinctly pedicellate; thorax yellowish brown; dorsal stripes faintly or not at all indicated; pleura yellowish, with a broad, brown band from the collare to the base of the halteres; halteres long, infuscated; coxae yellowish; legs tawny; extreme tip of the femora lighter; tarsi darker; abdomen brown, lighter below; basal lobes of hypopygium dark brown, lamella lighter brown; ovipositor ferruginous, blackish at the base; lower valves straight, rather heavy; upper valves more slender, slightly arcuated; wings hyaline; veins and stigma brown; auxiliary vein reaching a little beyond the origin of the praefurca, subcostal cross-vein at its tip; first longitudinal vein fading out a little beyond the marginal cross-vein before reaching the margin of the wing: discal cell closed. Length 7 mm., wing 9 mm.



Hab.—Stanford University, Cal. Two males, two females.

May at once be distinguished from *halterata*, which it resembles somewhat, by the position of the subcostal cross-vein.

Dicranomsia cervina, n. sp.—Brown; head brownish, darker above; rostrum yellow; palpi and antennae brown; thorax brownish, the dorsum with three darker brown stripes, the median one extending over the collare; scutullem and metanotum grayish brown; legs tawny, tarsi and the tips of the femora and tibiæ darker; halteres whitish, infuscated toward the tips, knobs brown; abdomen brown, much lighter below; hypopygium yellowish brown; tergum but little swollen, pleura about as large as lobes, basal half yellowish, distal half brownish; ventral style strongly recurved at the tip; wings with a very light brown tinge; stigma pale, indistinct; tip of the auxiliary vein beyond the origin of the praefurca; distance of the subcostal cross-vein from the tip of the auxiliary vein equal to one-half the length of the praefurca; discal cell closed. Length 7 mm., wing 8 mm.

Hab.—Stanford University, Cal. One male.

I have the following species from localities not recorded in Aldrich's catalogue.

D. longipennis Schum. N. H.; Wash. Not recorded from the Pacific coast heretofore.
D. citrina Doane. Stanford Univ., Cal.
D. immodesta O. S. Rigaud, Canada.
D. padica O. S. Rigaud, Canada.
D. liberata O. S. Pa.; Mass.
D. halterata O. S. Stanford Univ., Cal.; Keyport, Wash.
D. vulgata Berg. Wash.
D. stigmata Doane. Stanford Univ. and San Mateo, Cal.; Keyport, Wash.
D. marmorata O. S. Stanford Univ. and Pacific Grove, Cal.; Keyport, Wash.
D. duplicata Doane. Cold Springs, Col.; Pullman, Wash.

The Inflation of Larvae.

By Frank A. Merrick.

The growing interest in the breeding of Lepidoptera from the egg, working out life histories, or from the larvæ to secure perfect and authentic imagoes for the collection, emphasizes the importance of preserving the larvæ for future comparison.

The advantages of inflated larvæ over those that are preserved in liquids are manifold, possibly the chief of which is the ability to pin each species in the cabinet with its imago, thus greatly enhancing the value of the collection.

In taking up the inflation of larvæ at the Merrick Museum a few weeks ago, we found that, so far as we could ascertain, the apparatus in use for that purpose, failed to meet the important, I might say vital, factors required of such apparatus, which we assume to be—First, that the arrangement for inflation of the skin shall be susceptable of the most delicate adjustment ; that it shall be instantly changeable to a greater or less pressure ; that the pressure shall be constant as to force, and automatic. Second, that the temperature of the oven shall be equally controllable by the operator, and that it shall be impossible to produce a heat that shall scorch the most delicate skin, producing discoloration, or singe the hair of the